

### REMARKS

Claims 1-22 and 28-69 are pending in the Application. Of the pending claims, claims 1, 28, 37, 50 and 56 are independent claims. The Final Office Action ("FOA") rejected claims 28 and 56 under 35 U.S.C. 102(b) as being allegedly anticipated by U.S. Patent No. 4,973,159 to Sohma et al. ("Sohma"), claims 31 and 32 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Reissue Patent No. 32,598 to White ("White RE") and claims 56-65 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 3,825,762 to White ("White").

Claims 29 and 30 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sohma in view of U.S. Patent No. 5,233,405 to Wildnauer et al ("Wildnauer"), claim 33 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over White-RE in view of U.S. Patent No. 4,355,871 to Nevyas et al ("Nevyas") and claims 35-36 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over White-RE in view of Wildnauer.

Claims 1-19, 28, 31-50, 56 and 59 stand rejected under the judicially created doctrine of double patenting.

By this amendment, claims 31, 34, 56, 59-61 and 63 have been amended and claim 70 is new. No new matter has been introduced. Claims 1-22 and 28-70 are pending in the application.

### Double-Patenting Rejections

Applicants note that claims 1-19, 28, 31-50, 56 and 59 are rejected under the judicially create doctrine of obviousness-type double patenting. The rejections of claims 31-36 and 50 are provisional. Applicants have filed terminal disclaimers concurrently with this amendment and address the Sohma and Wildnauer references below. Consequently, Applicants request withdrawal of the double patenting rejections.

### The Rejection of Claim 28 under 35 U.S.C. § 102(b)

In the Final Office Action, independent claim stands rejected as being allegedly anticipated by Sohma. To anticipate a pending claim under 35 U.S.C. § 102(b), a reference must specifically teach every element recited in the pending claim, or at least inherently include every such element (*see*, MPEP §§2131 and 2131.01). Applicants respectfully submit that the rejection is improper because Sohma does not teach, *inter alia*, the required second optical grating positioned to disperse at least part of light passed through a first selection aperture. In contrast,

Sohma teaches a grating that functions as a light mixing element (see Sohma, column 13, lines 20-25).

In more detail, *a light dispersing optical system of the first spectroscope 2* is made up of the light dispersing grating 11a and a first optical system including a concave mirror 16 and a plane mirror 21 for guiding the dispersed light from the grating 11a to the intermediate slit 3. *A light mixing optical system of the second spectroscope 4* is made up of a light mixing grating 11b and a second optical system including a plane mirror 22 and a concave mirror 16 for focusing the dispersed light on the grating 11b. Drive means (not shown) drives the light dispersing optical system and the light mixing optical system so that these optical systems are optically symmetrical with respect to the intermediate slit 3. *Thus, the outgoing light from the exit slit 19 of the second spectroscope 4 is not dispersed.*

(Sohma, column 13, lines 39-55, with emphasis added). Thus, Sohma does not teach *a first optical grating positioned to disperse at least part of the light accepted through the entrance aperture and a second optical grating positioned to disperse at least part of the light passed through the first selection aperture as required in claim 28.*

Nevertheless, the Office Action suggests that an alleged lack of structural difference between the claimed invention and the prior art is sufficient to anticipate the deficient second optical grating positioned to disperse at least a portion of a selected range of wavelengths of the light dispersed by the first grating. Applicants disagree and respectfully submit that such suggestion is unsupported by the teachings of Sohma and cannot support the rejection of claim 28.

In particular, claim 28 requires a second selection aperture positioned to intercept part of the light dispersed by the second optical grating and operative to pass a selected range of wavelengths of the dispersed light as output light. Sohma does not teach such a selection aperture but explicitly teaches “a concave mirror 16 and a plane mirror 21 for guiding the dispersed light from the grating 11a to the intermediate slit 3...” and a plane mirror 22 and a concave mirror 16 for focusing the dispersed light on the grating 11b” (Sohma, column 13, lines 39-55). Thus, the convex mirrors in Sohma converge divergent light onto a slit, thereby preventing the required selection of wavelengths by the slit. Therefore, Applicants respectfully submit that the structure taught by Sohma is different from the structure claimed in claim 28 of the present application and that the Sohma structure is incapable of performing as intended in claim 28. For at least these reasons, the rejection of claim 28 should be withdrawn.

**The Rejection of Claims 31 and 32 under 35 U.S.C. § 102(b)**

Applicants submit that the §102 rejections of claims 31 and 32 should be withdrawn for at least the reason that they are rendered moot by the amendment to claim 31. Amended claim 31 requires, *inter alia*, an excitation mirror and an emission mirror whereby the excitation mirror is operative to direct incoming light arriving at the light transfer module from a light source and to illuminate an area. Claim 31 further requires the emission mirror to be positioned substantially coaxial with the area to be illuminated and the excitation mirror. White RE does not teach all of these elements. Nowhere does White RE teach that an excitation mirror, an emission mirror and an illumination area are positioned to be substantially coaxial and explicitly shows in Figs. 1 and 1B, for example, excitation and emission beams arranged orthogonally.

Additionally, White-RE teaches that a "portion of the emitted fluorescence is *collected by a spherical lens 33* and is directed thereby through a cylindrical lens 34 *to a spherical off-axis mirror 35* and a flat off-axis mirror 36" (see col. 4, lines 28-32, emphasis added). Additionally, mirrors 32 and 37 in White-RE are taught as directing light back through the sample for a second pass (col. 6, lines 3-5). Thus, mirrors 32 and 37 operate on second pass excitation and not on emission as required in the claims.

Therefore, for at least these reasons, Applicants submit that White-RE fails to teach each and every element of claims 31 and 32 and the rejections of claims 31 and 32 are improper and should be withdrawn.

**The Rejection of Claims 56-65 under 35 U.S.C. § 102(b)**

Regarding claims 56-65, the Office Action states that the claims recite insufficient detail of a light transfer module to distinguish them from any of the directing mirrors taught in White. For the purpose of advancing prosecution, Applicants have amended claims 56, 59-61 and 63 and have added claim 70 to more clearly set forth certain aspects of the claimed invention and, in particular, to more explicitly describe certain aspects of the claimed light transfer module.

Amended claim 56 requires a step of selectively analyzing polarization of the light emitted by the sample and claim 62 further requires restricting excitation light to a selected polarized plane. Claims 63, 64 and 70 require the insertion of one of a plurality of polarizing filters into the light path of light emitted from a sample and claims 64 and 70 further require the polarizing filter to be interposed between an emission mirror and the sample. White does not teach analyzing polarization of light or the restriction of light to a selected plane. Instead, White

explicitly teaches the use of unpolarized light including, in one of many examples, a diffuse reflector 220 that “includes a uniform white reflective surface, such as barium sulphate or magnesium oxide...” where “[t]he reflector serves to convert the incident beam into diffuse, depolarized light emitted in all directions, and it thus acts as an auxiliary source of reference light depolarizer 220.” Because it teaches the use of depolarized and does not teach or suggest polarizing of light, selective analysis of polarization of the light, or restriction of excitation light to a selected polarized plane, White cannot be said to explicitly or impliedly teach all elements of the claims.

For at least these reasons, Applicants respectfully submit that White does not teach all of the elements required in claims 56-65 and in new claim 70 and the rejections of claims 56-65 should be withdrawn.

#### **The Rejection of Claims 29, 30, 33, 35 and 36 under 35 U.S.C. § 103(a)**

Given the foregoing deficiencies of the individual primary and secondary references asserted by the Examiner, Applicants respectfully submit that the claim rejections based upon 35 U.S.C. §103(a) are improper, and that an ordinarily skilled artisan would not have been motivated to combine the references in the manner suggested by the Examiner or to reasonably expect a successful outcome from such combination.

Regarding claims 29, 30, 35 and 36, both White-RE and Sohma are silent regarding polarization of light and nothing in either of these references would have motivated one of ordinary skill in the art to combine the references with any other reference for the purpose of introducing polarizing elements as recited in the claims of the present invention.

For example, the Sohma reference is directed particularly to teachings of a single, dual grating imaging monochromator. Notably, Sohma is entirely silent regarding polarization of light. Sohma merely teaches an image forming monochromator that “mix[es] that part of the spectral components which exists in a desired wavelength range” in a system and method of “forming a mixed light image” (see, e.g. column 22, lines 48-51). Hence, Sohma teaches a single, dual grating, collimating imaging monochromator which produces an image of a complete emission spectrum for light generated by an external and independent polychromatic light source. A skilled artisan would not have been motivated to use the Sohma apparatus as a wavelength monochromator. Nothing in Sohma suggests any benefit or successful outcome that could be achieved by introduction of polarizing components.

Nor would Wildnauer or Nevyas have cured the deficiencies of Sohma and White-RE. Wildnauer merely provides a means for avoiding undesirable polarization effects by using a two pass scanner. Specifically, Wildnauer teaches rotation of polarization components on successive passes to compensate for efficiencies of diffraction gratings that vary with polarization of incident light. (See paragraph spanning cols. 3-4). Thus, Wildnauer teaches compensating for, or eliminating undesirable effects of light polarization and does not teach or suggest systems or methods for causing or analyzing polarization of light. It is respectfully submitted that a reader of Wildnauer would have been motivated to introduce polarizing components that would exacerbate polarization-caused performance issues of gratings.

For at least these reasons, it cannot reasonably be said motivation could have existed to combine White-RE or Sohma with Wildnauer because both White-RE and Sohma are silent regarding polarization of light and Wildnauer teaches amelioration of effects caused by undesirable polarization of light. Furthermore, it is apparent that no successful outcome could have been anticipated from such combination.

Regarding claim 33, Nevyas is directed to optical beam splitting and rotating for the purpose of creating multiple images of an optical target. (See Nevyas Abstract). Nevyas provides no teaching or suggestion of excitation, emission or fluorescent light. Nevyas is clearly a dissimilar application and there would have been no motivation for one of ordinary skill in the art to look to Nevyas surgical device to resolve problems in the area of monochromators.

Applicants respectfully submit that the Nevyas and Wildnauer references do not cure the deficiencies identified in Sohma and White-RE and that no motivation would have existed to combine the cited art as suggested by the Examiner. Therefore, Applicants respectfully submit that, for at least the foregoing reasons, the §103 rejections of claims 29-30, 33 and 35-36 should be withdrawn.



**CONCLUSION**

For at least the reasons presented above, it is respectfully submitted that it is clear that the Examiner erred in rejecting the claims because the references do not teach every aspect of the claimed invention either explicitly or impliedly. Therefore, the rejections are improper. Further, the claims are believed to be in form for allowance, and such action is hereby solicited.

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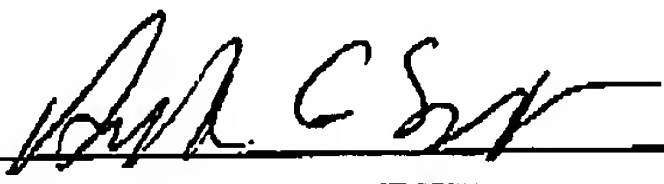
PILLSBURY WINTHROP SHAW PITTMAN LLP

2475 Hanover Street

Palo Alto, CA 94304-1114

Telephone: (650) 233-4802

Facsimile: (650) 233-4545 Customer Number: 27498

  
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ANTHONY G. SMYTH  
Registration No. 55636